Remarks/Arguments

Reconsideration of the above-identified application in view of the present amendment is respectfully requested.

By the present amendment, claims 1 and 16 have been amended to add the limitation that the binder is present at an amount less than 1 weight %. Claim 9 has been cancelled. Support for amended claims 1 and 16 can be found at p. 15, ll. 6-13 and p. 10, ll. 16-17 of the present application.

Below is a discussion of the 35 U.S.C. §103(a) rejection of claims 1, 4-7, 9-12, 14-16, 18 and 22.

1. 35 U.S.C. §103(a) rejection of claims 1,4-7, 9-12, 14-16, 18 and 22.

Claims 1, 4-7, 9-12, 14-16, 18, and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,656,246 to Kanoya *et al.* (hereinafter, "Kanoya") in view of U.S. Patent No. 6,641,869 to Ikeda *et al.* (hereinafter, "Ikeda"). The Office Action argues that Kanoya teaches a hydrogen-absorbing alloy powder comprising metal matrix particles and an added component consisting of a group VIII transition metal in the amount of 0.1 and 5.0% by atom. The Office Action acknowledges that Kanoya does not teach a binding agent at least partially covering the mechanically alloyed hydrogen-absorbing storage material. The Office Action then argues that Ikeda teaches a method for forming electrodes comprising the steps of combining a hydrogen storage powder with a binder and an agent to form a hydrogen-absorbing slurry, wherein the binder is PEO in an amount of 1% by weight of the slurry. The Office Action argues that it would have been obvious to one

having ordinary skill in the art to utilize the method of Ikeda to make the mechanically-alloyed hydrogen storage material.

Amended claim 1 is not obvious over Kanoya in view Ikeda because: (1) the combination of Kanoya and Ikeda does not teach or suggest a binding agent present in an amount less than 1 weight % of the mechanically alloyed storage material particles; and (2) there is no motivation for one having ordinary skill in the art to modify the teachings teachings of Kanoya and Ikeda to use less than 1 weight % binder.

Kanoya teaches a hydrogen-absorbing alloy powder comprising an aggregate of alloy particles. Kanoya also discloses that each of the alloy particles includes a metal matrix and added-components that are bound together by mechanical alloying. Kanoya does not teach, however, that the hydrogen-absorbing alloy powder includes a binding agent, which at least partially covers the alloy particles so as to effect firm binding between the alloy particles while allowing free passage of hydrogen in and out of the alloy particles and/or that the binding agent is provided in an amount less than 1 part by weight of 100 parts of the mechanically alloyed storage material particles.

Ikeda discloses that PEO was added as a water-soluble binder at an amount of 1% by mass with respect to the mass of the hydrogen-absorbing alloy powder. Ikeda, however, does not teach or suggest that the binding agent at least partially covers the alloy particles so as to effect firm binding between the alloy particles while allowing free passage of hydrogen in and out of the alloy particles and/or that the binding agent is provided in an amount less than 1 part by weight of 100 parts of the

mechanically alloyed storage material particles. Accordingly, Kanoya in view of Ikeda do not teach or suggest a binding agent present in an amount less than 1 weight %.

Moreover, there is nothing in Ikeda to suggest using less than 1 weight % binder or that the binder is a result effective variable that should be optimized to less than 1 weight %. Ikeda only teaches that the binding agent provides an adhesive force among the powder particles of the active material in the vicinity of the electrically conductive core as well as the adhesive force between the electrically conductive core body and the powder of active material. Ikdea does not teach that the amount of binder is minimized to less than 1 weight % so as to at least partially covers the alloy particles and effect firm binding between the powder particles while allowing free passage of hydrogen in and out of the powder particles.

In contrast, the present application teaches that the amount of added binder should be kept as small as possible because adding a resin binder in an amount less than 1 wt% can reduce the surface area accessible to the hydrogen and hence the hydrogen storage capacity per unit weight of the alloy (p. 10, ll. 10-16). One would normally expect that small diameter particles, such as the ones disclosed in the present application, would require a large amount of binder to maintain integrity and prevent particle loss (p. 15, ll. 8-9). Despite the low binder content, however, the composition of the present application does not crack, delaminate or spall, which could occur as a result of swelling the composition after hydrogen uptake (p. 15, ll. 9-11). Accordingly, Applicants respectfully submit that amended claim 1 is not obvious over Kanoya in view of Ikeda because the combination of these references does not

teach or suggest a hydrogen-absorbing storage material which includes a binding agent present in an amount of less than 1 weight %.

Amended claim 16 is not obvious over Kanoya in view Ikeda because: (1) the combination of Kanoya and Ikeda does not teach or suggest a binding agent present in an amount less than 1 weight % of the mechanically alloyed storage material particles; and (2) there is no motivation for one having ordinary skill in the art to modify the teachings teachings of Kanoya and Ikeda to use less than 1 weight percent binder.

As discussed above, Kanoya in view of Ikeda do not teach or suggest a binding agent present in an amount less than 1 weight %. Moreover, there is nothing in Ikeda to suggest using less than 1 weight % binder or that the binder is a result effective variable that should be optimized to less than 1 weight %. Ikeda only teaches that the binding agent provides an adhesive force among the powder particles of the active material in the vicinity of the electrically conductive core as well as the adhesive force between the electrically conductive core body and the powder of active material. Ikdea does not teach that the amount of binder is minimized to less than 1% by weight so as to at least partially covers the alloy particles and effect firm binding between the powder particles while allowing free passage of hydrogen in and out of the powder particles.

In contrast, the present application teaches that the amount of added binder should be kept as small as possible because adding a resin binder in an amount less than 1 wt % can reduce the surface area accessible to the hydrogen and hence the hydrogen storage capacity per unit weight of the alloy (p. 10, ll. 10-16). One would

normally expect that small diameter particles, such as the ones disclosed in the present application, would require a large amount of binder to maintain integrity and prevent particle loss (p. 15, ll. 8-9). Despite the low binder content, however, the composition of the present application does not crack, delaminate or spall, which could occur as a result of swelling the composition after hydrogen uptake (p. 15, ll. 9-11). Accordingly, Applicants respectfully submit that amended claim 16 is not obvious over Kanoya in view of Ikeda because the combination of these references does not teach or suggest a hydrogen-absorbing storage material which includes a binding agent present in an amount less than 1 part by weight of 100 parts of mechanically alloyed storage material particles.

Applicants also respectively request that the 35 U.S.C. §103(a) rejection of claims 4-7, 10-12, 14-15, 18 and 22, which depend either directly or indirectly from claims 1 and 16, be withdrawn.

Additionally, Applicants respectively submit that the 35 U.S.C. §103(a) rejection of claim 9 is rendered moot by the present amendment.

In view of the foregoing, it is respectfully submitted that the above-identified Application is in condition for allowance, and allowance of the above-identified Application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this matter to our Deposit Account No. 20-0090.

Respectfully submitted,

/Richard A. Sutkus/
Richard A. Sutkus
Reg. No. 43,941

TAROLLI, SUNDHEIM, COVELL,
& TUMMINO L.L.P.
1300 East Ninth Street, Suite 1700
Cleveland, Ohio 44114
Phone:(216) 621-2234
Fax: (216) 621-4072
Customer No.: 68,705